

REMARKS

Claims 334-373 and 378-500, which were withdrawn as being drawn to a nonelected invention according to the election dated January 22, 2003, have been cancelled without prejudice or disclaimer. Applicants reserve the right to pursue claims similar or identical to claims 334-373 and 378-500 in one or more applications claiming priority to the instant application.

Claims 99-101 and 106-108 have also been cancelled without prejudice or disclaimer. Applicants reserve the right to pursue claims similar or identical to these claims in one or more applications claiming priority to the instant application.

Applicants have amended independent claims 1, 56, 97, 110, and 374 to clarify that the device comprises at least four semiconductor nanowires assembled together in electrical communication as a component of the electrical device. Applicants have also amended these claims to clarify that the semiconductor nanowires have a variation in individual average diameter of less than 20% relative to each other, and such semiconductor nanowires are selected from a population of semiconductor nanowires. In addition, Applicants have amended these claims to recite that the at least four semiconductors have at least one portion having a smallest width of less than 50 nanometers. Support for this amendment can be found in the specification, for example, on page 36, lines 19-21. No new matter has been added by these amendments.

Applicants have also accordingly amended dependent claims 2, 5, 7, 8, 42, 47, 57, 58-61, 72, 75, 76, 98, 118-120, 175, 181, 183, 186-189, 191, 194, and 194 to provide proper antecedent basis. Applicants have also cancelled claims 32-37 without prejudice.

Claims 62-71 have been amended to clarify that the point is any point along the longitudinal axis of at least one of the at least four semiconductors.

Claims 1-31, 38-47, 49-72, 75, 76, 97, 98, 102-105, 109-111, 113-116, 118-201, 261, 262, and 374-377 are now pending in the application. Claims 3, 4, 9-31, 49-55, 102-105, 109, 111, 113-116, 121-174, 176-180, 182, 184, 185, 190, 192, 193, 196-201, 261, and 262 remain withdrawn. Claims 1, 2, 5-8, 38-47, 56-72, 75, 76, 97, 98, 102-101, 110, 118-120, 175, 181, 183, 186-189, 191, 194, 195, and 374-377 are now active.

Claim Objections

Claims 1, 2, 5-8, 32-47, 56-72, 75, 76, 97-101, 106-108, 110, 118-120, 175, 181, 183, 186-189, 191, 194, 195 and 374-377 have been objected to for failing to define physical and/or positional relationships between the at least four semiconductors. Applicants have amended independent claims 1, 56, 97, 110, and 374 to clarify that the device comprises at least four semiconductor nanowires assembled together in electrical communication as a component of the electrical device, and have cancelled independent claims 106-108.

Claims 1 and 56 have been objected to, as the term “the population of semiconductors” lacks a sufficient antecedent basis. These claims have been amended to provide proper antecedent basis.

Claim 57 has been objected to for failing to clarify the relationship between the at least four semiconductors recited in claim 56 and the semiconductor recited in claim 57. In addition, the term “the first” has been objected to as lacking sufficient antecedent basis. Claim 57 has been amended to address these issues.

Claims 43-47 and 58-61 have been objected to for lacking adequate description. Applicants note that the specification, for example, on page 36, lines 24-28 describes semiconductors having such ratios, and thus, it is believed that the terms are adequately defined.

Claims 62-71 have been objected to, as the term “the point” lacks sufficient antecedent basis. Applicants have amended claims 62-71 to address this issue.

Claim 183 has been objected to for failing to clarify the relationship between the at least four semiconductors recited in claim 110, and the semiconductor recited of claim 183. Claim 183 has been amended to address this issue.

In view of the above-described amendments, it is respectfully requested that the objection of these claims be withdrawn.

Rejections under 35 U.S.C. §112, ¶1

Claims 99-101 and 106-108 have been rejected under 35 U.S.C. §112, ¶ 1, as failing to comply with the written description requirement. The Patent Office asserts that the specification does not provide adequate description for “coherent transport,” “no scattering,” “ballistic transport,” or “Luttinger liquid behavior.”

Applicants have elected to cancel these claims to expedite the patent application process. However, Applicants believe that those of ordinary skill in the art would understand the meanings of these terms, as applied to certain quantum mechanical aspects of electron transport behavior within the nanoscale semiconductors.

Rejections under 35 U.S.C. §102(e)

Claims 1, 2, 5, 33-47, 56-72, 75, 76, 97-101, 106-108, 110, 118-120, 175, 181, 183, 186-189, 191, 194, 195, and 374-377 have been rejected under 35 U.S.C. §112(e) as being anticipated by Kuekes, et al., U.S. Patent No. 6,559,468 ("Kuekes").

Initially, Applicants do not concede that Kuekes is properly prior art to the Applicants' claimed inventions. Applicants reserve the right to establish invention dates for the claimed inventions that are on or before the effective 35 U.S.C. §102(e) date of Kuekes relied on in the Office Action.

Kuekes appears to disclose crossed molecular wire transistors, and certain properties of the crossed nanoscale wires, but does not provide an enabling disclosure of, at least, the invention as recited in any of the pending claims of this application. Specifically, Kuekes does not disclose or enable nanowires that are made using a process of selecting a population of catalyst colloid particles having a variation in diameter of less than 20% and growing a population of semiconductor nanowires catalytically from the catalyst colloid particles, or a device including at least four nanowires selected from a population of nanowires having a variation in diameter of less than about 20% relative to each other. Thus, Kuekes cannot be applied under 35 U.S.C. §102(e) as a reference against the Applicants' claimed inventions. At best, Kuekes references fabrication techniques from the existing literature that can be used in conjunction with the invention in Kuekes (see, e.g., column 8, lines 35-44). However, none of these references would allow one of ordinary skill in the art to fabricate an arrangement as claimed in this application. These references refer to electron beam lithography and nanoimprint lithography techniques. At scales of less than about 50 nm, these techniques are unable to produce uniform semiconductor nanoscale wires. Accordingly, it is believed that Kuekes does not disclose or suggest the arrangements as claimed herein, and it is therefore respectfully requested that the rejection of these claims be withdrawn.

Rejections under 35 U.S.C. §103(a)

Claims 6 and 8 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Kuekes.

Claims 6 and 8 each indirectly depend from independent claim 1. For at least the reasons explained above with respect to the rejection under §102(e), in view of Kuekes, the premise of the rejection of claim 1 (that Kuekes enables all of the limitations of claim 1) is believed to be incorrect. Accordingly, while Applicants do not concede that there would have been any suggestion or motivation to make the modification suggested in the Office Action, the present rejection cannot stand, regardless. Thus, withdrawal of the rejection of claims 6 and 8 is respectfully requested.

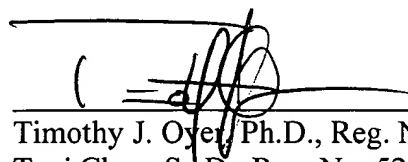
CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after the foregoing amendments and remarks, that the application is not in condition for allowance, the Examiner is requested to call the undersigned at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,

By:



Timothy J. Oyer, Ph.D., Reg. No. 36,628
Tani Chen, So.D., Reg. No. 52,728
Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2206
Telephone: (617) 646-8000